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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,671	06/20/2003	Carl Staelin	200309618-1	6065

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EXAMINER	
HOLMES, MICHAEL B	
ART UNIT	**PAPER NUMBER**
2121	

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/600,671	STAELIN ET AL.	
	Examiner	Art Unit	
	Michael B. Holmes	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *(3)* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *April 24, 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-11,13-27 and 29-37* is/are rejected.

7)☒ Claim(s) *8,12 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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Examiner's Detailed Office Action

1. This Office Action is responsive to communication received on April 24, 2006.

2. Amendment under 37 CFR § 1.111 reconsideration and allowance of application is respectfully requested by applicant.

3. Applicant has elected not to amend the claims. Moreover, applicant's arguments have been fully considered, however, they are not persuasive. The prior rejection under 35 USC § 102(b) & 35 USC § 103(a) stands. The complete text of which has been included below.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 9, 10, 14-16, 18, 19, 20, 21, 29, 30, 32-37 are rejected under 35 U.S.C. 102(b) as being anticipated by *Skeirik* (USPN 5,826,249).

Regarding claims 1, 9, 10, 14-16, 18, 19, 20, 21, 29, 30, 32-37. *Skeirik* discloses training a neural network with input data, the neural network including a plurality of connection weights [*see* C 6, L 26 to C 7, 12 & FIG. 21 & FIG. 34], the method comprising: using the neural network to rescale the input data [*see* C 23, L 29-49]; determining errors for the rescaled data [*see* C 23, L 29-49]; and using neighborhoods of the errors to adjust the connection weights [*see* C 23, L 29-49], an apparatus for training a neural network on input data, the neural network having a plurality of connection weights, the apparatus comprising a processor programmed to use the neural network to rescale the input data [*see* FIG. 1, FIG. 2, FIG. 34, C 13, L 14-56 and C 23, L 29-49]; determine errors for the rescaled data [*see* FIG. 1, FIG. 2, FIG. 34, C 13, L 14-56 and C 23, L 29-49]; and use neighborhoods of the errors to adjust the connection weights of the neural network [*see* FIG. 1, FIG. 2, FIG. 34, C 13, L 14-56 and C 23, L 29-49].

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 2 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Skeirik* (USPN 5,826,249) in view of *Bell et al.* (USPN 5,550,937).

Skeirik has been discussed above. *Skeirik* does not describe the limitations of claims 2 & 22: input data represents a set of images, and wherein the neighborhoods are spatial error neighborhoods. However, *Bell et al.* describes the limitations of claims 2 & 22: input data represents a set of images, and wherein the neighborhoods are spatial error neighborhoods.

Regarding claims 2 & 22. *Bell et al.* describes input data represents a set of images, and wherein the neighborhoods are spatial error neighborhoods [*see* Abstarct]. It would have been obvious at the time the invention was made to a persons having ordinary skill in the art to combine *Skeirik* with *Bell et al.* because the need to mutually register multiple images that have been derived from diverse types of image collection devices, including those having different observation geometry parameters, is successfully addressed by a new and improved image processing mechanism which correlates the edge content of reduced sized neighborhoods of pixels distributed throughout respective ones of a pair of digital images to be mutually aligned. The digital images to be registered are obtained by translating or referencing the original images to a prescribed registration surface, such as a terrestrial image plane, in accordance with the geometry projection parameters of the respective image collection systems from which the pair of original images were obtained [*see* C 1, L 59 to C 2, L 5].

8. Claims 3 & 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Skeirik* (USPN 5,826,249) in view of *Galperin et al.* (USPN 6,640,215).

Skeirik has been discussed above. *Skeirik* does not describe the limitations of claims 3 & 23: error neighborhoods are used with a non-gradient algorithm to adjust the connection weights. However, *Galperin et al.* describes the limitations of claims 3 & 23: error neighborhoods are

used with a non-gradient algorithm to adjust the connection weights.

Regarding claims 3 & 22. *Galperin et al.* describes error neighborhoods are used with a non-gradient algorithm to adjust the connection weights [*see* C 3, L 36 & L 63-64]. It would have been obvious at the time the invention was made to a persons having ordinary skill in the art to combine *Skeirik* with *Galperin et al.* because *Galperin et al.* fulfills the need for a process that builds a response model directly maximizing the response rate in the top of the list, and at the same time allows marketers to specify the segment of the customer list they are most interested in [*see* C 1, L 64-67].

9. Claims 4-7 & 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Skeirik* (USPN 5,826,249) in view of *Ng, L.; Solo, V.;* ("*Ng et al.*"), "Choosing the Optimal Neighbourhood Size in Optical Flow Problems with Errors-In-Variables Modelling, IEE, 1998.

Skeirik has been discussed above. *Skeirik* does not describe the limitations of claims 4-7 & 24-27: the error neighborhoods are used to generate derivatives of total error with respect to a neighborhood of errors; wherein gradients are computed from the derivatives; and wherein the gradients are used to adjust the connection weights, each derivative is computed as the sum of the partial derivatives of the errors in an error neighborhood, each derivative of total error with respect to a neighborhood of errors is proportional to a product of a penalty matrix and an error vector, the error vector describing the neighborhood of errors, the penalty matrix punishing any spatially correlated errors, the penalty matrix is positive definite, and includes weights that

penalize undesirable patterns of errors. However, *Ng et al.* teaches the error neighborhoods are used to generate derivatives of total error with respect to a neighborhood of errors; wherein gradients are computed from the derivatives; and wherein the gradients are used to adjust the connection weights, each derivative is computed as the sum of the partial derivatives of the errors in an error neighborhood, each derivative of total error with respect to a neighborhood of errors is proportional to a product of a penalty matrix and an error vector, the error vector describing the neighborhood of errors, the penalty matrix punishing any spatially correlated errors, the penalty matrix is positive definite, and includes weights that penalize undesirable patterns of errors.

Regarding claims 4-7, 11, 24-27 & 31. *Ng et al.* teaches error neighborhoods are used to generate derivatives of total error with respect to a neighborhood of errors; wherein gradients are computed from the derivatives; and wherein the gradients are used to adjust the connection weights, each derivative is computed as the sum of the partial derivatives of the errors in an error neighborhood, each derivative of total error with respect to a neighborhood of errors is proportional to a product of a penalty matrix and an error vector, the error vector describing the neighborhood of errors, the penalty matrix punishing any spatially correlated errors, the penalty matrix is positive definite, and includes weights that penalize undesirable patterns of errors. [*see* pages 186-190] It would have been obvious at the time the invention was made to a persons having ordinary skill in the art to combine *Skeirik* with *Ng et al.* because to the author's knowledge there has been heuristic discussion on the choice of the optimal neighbourhood size. [*see* Introduction]

10. Claims 13 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Skeirik* (USPN 5,826,249) in view of *Bhattacharjya* (USPAP 2004/0114826 A1).

Skeirik has been discussed above. *Skeirik* does not describe the limitations of claims 13 & 17: upscaling an input image, using the neural network. However, *Bhattacharjya* describes the limitations of claims 13 & 17: upscaling an input image, using the neural network.

Regarding claims 13 & 17. upscaling an input image, using the neural network trained [*see* Abstract, [0041], [0054], [0066]]. It would have been obvious at the time the invention was made to a persons having ordinary skill in the art to combine *Skeirik* with *Bhattacharjya* because scaling an image involves generating a new image that is larger or smaller than the original. Scaling has many applications in scanners, printers, and photo-finishing systems, and digital cameras. In the case of upscaling, the new image is larger; that is, the new image has more pixels in the horizontal and/or vertical directions than the original image. Thus, in upscaling new pixels must created [0004].

Claim Objection(s)

11. Claims 8, 12 & 28 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

12. As aforementioned, applicant's arguments have been fully considered, however, they are not persuasive. Examiner interpreted "rescaled" per the Merriam-Webster's definition *to plan, establish, or formulate on a new and usu. smaller scale.* Applicant argues *Skerik* does not teach or suggest computing errors for rescaled input data. Examiner disagrees and would like would like to refer applicant to *Skeirik* [*see* FIG. 10, C 23, L 29-56]. Applicant also argued the *Skerik* does not teach or suggest using neighborhood of errors to adjust the connections. Examiner interpreted "*neighborhood*" as a set of training data *Skeirik* [*see* FIG. 10, C 23, L 57-65]

Examiners Summary

13. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

14. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

15. Any inquires concerning this communication or earlier communications from the examiner should be directed to Michael B. Holmes, who may be reached Monday through Friday, between 8:00 a.m. and 5:00 p.m. EST. or via telephone at (571) 272-3686 or facsimile transmission (571) 273-3686 or email Michael.holmesb@uspto.gov.

If you need to send an Official facsimile transmission, please send it to (703) 746-7239.

If attempts to reach the examiner are unsuccessful the Examiner's Supervisor, Anthony Knight, may be reached at (571) 272-3687.

Hand-delivered responses should be delivered to the Receptionist @ (Customer Service Window Randolph Building 401 Dulany Street Alexandria, VA 22313), located on the first floor of the south side of the Randolph Building.

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Wednesday, June 14, 2006

MBH

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